

June 20, 1996

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Federal Communications Commission
Office of Secretary

EX PARTE

William F. Caton, Acting Secretary Federal Communications Commission 1919 M Street, N.W.- Rm. 222 Washington, D.C. 20554

Re: CS Docket No. 96-45

Dear Mr. Caton:

On May 30, 1996, Susan Baldwin and Michael DeWinter of Economics and Technology Inc., and representatives of The National Cable Television Association met with the Federal-State Joint Board on behalf of The National Cable Television Association.

You will find attached a copy of the handouts that were distributed to the Joint Board. At that meeting, the ETI representatives reiterated the comments filed by NCTA in the above proceeding. If you have any questions concerning this matter, please contact the undersigned.

Sincerely

Richard L. Cimerman

cc: Deborah Dupont

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ETI'S CORRECTIONS TO AND SENSITIVITY ANALYSES OF THE BENCHMARK COST MODEL

Presentation to the Staff of the Joint Board on Universal Service

May 30, 1996

ETI's approach to assessing the Benchmark Cost Model

- Response to US West's concerns about ETI's sensitivity analyses
- General overview of the BCM
- Rationale for examining the variables, assumptions, and algorithms discussed in ETI's two reports

Corrections and sensitivity analyses

Run of the BCM on a 49-CBG data sample

Questions and answers

BCM Default

• Mid-80s switch costs, no remote serving units, public data

ETI

• Early-90s switch costs, public data

BCM Default

- Residential and business lines reflected in switch cost computations
- Only single residential lines included to size outside plant
- Low fill factor in outside plant engineered for volatile demand (e.g., additional lines, businesses)

ETI

- Switch costs expressed only on a per-line basis, thus presence of businesses is moot for switch cost computations
- Single line basic residential service, thus stable demand, thus high fill factor
- Sensitivity analysis of including businesses for deploying outside plant
- Some of economies of scale and scope should flow back to single line residence service

BCM Default

• Structure costs vary in a linear fashion with cable costs

ETI

• Structure costs vary in a non-linear fashion

BCM

• Digital loop equipment costs and fiber-copper crossover point are contradictory

ETI

• Sensitivity analyses of these related assumptions

BCM

- Computes costs at CBG level
- Computes USF requirement at CBG level

ETI

- Computes costs at CBG level
- Computes USF requirements at wire center level

BCM

• No adjustment for penetration rate

ETI

• Adjustment for penetration rate

ETI Demonstration

- Real model
- Real data
- Only 49 CBGs (from Missouri)
- Thus nonsensical "results"

USER INPUTS TO MODEL 4200 =Maximum Copper Feeder Cable Size 3600 =Maximum Copper Distribution Cable Size SLC Cost per Access Line Fill Factors for Electronics 500 0.95 AFC SLC 0.95 0.95 Switching AFC Cost per Access Line 550 Cable Fill factors Feeder Distribution 0 0.95 0.95 5 0.95 0.95 200 0.95 0.95 650 0.95 0.95 850 0.95 0.95 2550 0.95 0.95 Enter 2 digit whole percentage numbers for the following data: Fiber Feeder UG/Aerial Mix Table Fiber Cable Discount % (Enter whole % in space below) Density UG% Aerial% 20 0-5 60 40 5-200 65 35 200-650 Copper Cable Discount % (Enter whole % in space below) 70 30 650-850 80 20 850-2550 90 10 >2550 100 0 AFC Electronics Discount % Copper Feeder UG/Aerial Mix Table Density UG% Aerial% 0-5 50 SLC electronics Discount % 40 5-200 65 35 20 200-650 70 30 650-850 80 20 850-2550 90 10 Fiber Cable Cost Cable Size Cost UG Cost Aeria >2550 100 5.56 5.24 144 Distribution UG/Aerial Mix Table 96 3.80 3.53 Density UG% Aerial% 72 2.84 2.65 0-5 90 10 60 2.41 2.23 5-200 80 48 1.98 1.84 20 200-650 70 30 36 1.60 1.46 650-850 65 35 24 1.05 1.18 850-2550 0.98 60 18 0.85 40 >2550 50 50 12 0.79 Feeder Cable Cost Cable Size Cost UG Cost Aeria Distribution Cable Cost Cable Size Cost UG Cost Aeria 4200 25.70 25.40 3600 22.20 21.90 3600 22,20 21.90 3000 18.80 18.50 3000 18.80 18.50 2400 14.30 14.10 2400 14.30 14.10 1800 12.44 12.24 12,44 10.68 10.00 1800 12.24 1200 10.00 1200 10,68 900 7.82 7.51 7.51 7.05 900 7.82 600 7.13 600 7.13 7.05 400 4.56 4.62 4.56 4.62 200 400 2.36 2.33 2.33 100 200 2,36 1.262 1.266 0.675 100 1.262 1.266 50 0.572 Pricing after discount **AFC** 495 SLC 400



Inputs/Algorithms of the BCM Analyzed by ETI

(Analyses Conducted in isolation or simultaneously through runs of the BCM using Washington State input data as described in Appendix 8 of the ETI Report)

ETI Corrections of the BCM

E11 Corrections of the BCM		
Input/Algorithm	BCM Default Value	Adjustment/Sensitivity Analysis
Per Line Switch Cost	\$238.87	Reduced to \$167 Per Line
Fixed Cost per Switch	\$647,526	Reduced to \$0
Feeder and Distribution Cable Fill Factors	Feeder: 65% - 80% Dist.: 25% - 75%	Feeder and Distribution Fill Factors Increased to 95%
SLC and AFC Fill Factors	80%	Increased to 95%
Subscribership Rate	No Allowance	Average cost per line divided by .96 to reflect subscribership rate in Washington State
Aggregation to the Wire Center	BCM computes costs and USF requirement at the CBG level	Costs computed at the CBG level; USF requirement computed at the wire center level
Selected Sensitivity Analyses (Conducted by ETI	
SLC and AFC Costs and Discounts	SLC: \$500 20% AFC: \$550 10%	SLC: \$250 40% AFC: \$500 25%
Copper/Fiber Crossover Point	Fiber used when total distribution distance exceeds 12,000 feet	Crossover point lowered to 9,000 feet and increased at 3,000 foot intervals up to 27,000 feet
Business Lines	Only recognized in calculation of switch investment/line	Number of households grossed up by a factor of 1.44



BCM Default Results Washington State

Density	Data	Total
<=5	Sum of # Households	62,645
1	Average of Loop Length	81,872.32
	Average of Loop \$ per HH	4,513,14
	Average of Total Invatmnt/Ln	5,176.39
>2550	Sum of # Households	364,583
	Average of Loop Length	8,070.19
	Average of Loop \$ per HH	218.26
	Average of Total invetmnt/Ln	479.26
200 to 650	Sum of # Households	273,086
j	Average of Loop Length	15,153.19
ŧ	Average of Loop \$ per HH	430.99
Ĺ	Average of Total Invetmnt/Ln	717.90
5 TO 200	Sum of # Households	372,988
	Average of Loop Length	28,234.15
]	Average of Loop \$ per HH	1,003.67
	Average of Total invetment/Ln	1,356.13
650 to 850	Sum of # Households	109,294
	Average of Loop Length	12,680.94
	Average of Loop \$ per HH	332.85
	Average of Total Invetmnt/Ln	604.04
850 to 2550	Sum of # Households	689,169
	Average of Loop Length	11,045.12
	Average of Loop \$ per HH	323.62
	Average of Total Invetment/Ln	589.75

Density	Data	Total
<≖5	Average of Monthly Cost1	136.64
	Average of Monthly Cost2	99.06
>2550	Average of Monthly Cost1	12.65
	Average of Monthly Cost2	9.17
200 to 650	Average of Monthly Cost1	18.95
	Average of Monthly Cost2	13.74
5 TO 200	Average of Monthly Cost1	35.80
	Average of Monthly Cost2	25.96
650 to 850	Average of Monthly Cost1	15.95
	Average of Monthly Cost2	11.56
850 to 2550	Average of Monthly Cost1	15.57
	Average of Monthly Cost2	11.29

Aggregate Support at \$20=	ARMIS \$ 158,350,839	DIRECT \$ 77,846,835
Aggregate Support at \$30=	\$ 97,982,543	\$ 50,692,630
Aggregate Support at \$40=	\$ 72,368,201	\$ 37,662,589
Annual Benchmark Cost =	\$ 524,623,612	\$ 380,427,268
State Average Monthly Cost=	\$ 23.36	\$ 16.94

BCM default values



Partially Corrected BCM Results USF Requirement Computed at the CBG Level Washington State

Density	Data	Total
<=5	Sum of # Households	62,645
	Average of Loop Length	81.872.32
	Average of Loop \$ per HH	4,303.10
	Average of Total invetment/Ln	4,477.28
>2550	Sum of # Households	364,583
	Average of Loop Length	8,070.19
	Average of Loop \$ per HH	198.98
	Average of Total Invetmnt/Ln	373.16
200 to 650	Sum of # Households	273,086
	Average of Loop Length	15,153.19
1	Average of Loop \$ per HH	356.31
1	Average of Total Invetmnt/Ln	530.49
5 TO 200	Sum of # Households	372,988
ĺ	Average of Loop Length	28,234.15
	Average of Loop \$ per HH	866.56
ļ.	Average of Total invatment/Ln	1,040.74
650 to 850	Surn of # Households	109,294
	Average of Loop Length	12,660.94
	Average of Loop S per HH	293.74
	Average of Total Invatmnt/Ln	467.92
850 to 2550	Sum of # Households	689,169
	Average of Loop Length	11,045.12
	Average of Loop \$ per HH	294.19
	Average of Total Invetment/Ln	468.37

Density	Data	Total
< = 5	Average of Monthly Cost1	123.11
	Average of Monthly Cost2	89.27
>2550	Average of Monthly Cost1	10.28
	Average of Monthly Cost2	7.44
200 to 650	Average of Monthly Cost1	14.59
	Average of Monthly Cost2	10.58
5 TO 200	Average of Monthly Cost1	28.62
	Average of Monthly Cost2	20.75
650 to 850	Average of Monthly Cost1	12.87
	Average of Monthly Cost2	9.33
850 to 2550	Average of Monthly Cost1	12.88
	Average of Monthly Cost2	9.34

Aggregate Support at \$20=	ARMIS \$ 63.696.334	DIRECT \$ 29,230,056
Aggregate Support at \$30=	\$ 36,307,269	\$ 17,429,545
Aggregate Support at \$40=	\$ 25,193,258	\$ 11.430.572
Annual Benchmark Cost =	\$ 389,651,154	\$ 282,552,902
State Average Monthly Cost=	\$ 17.35	\$ 12.58

\$167 Per Line Switch Moderate Cable Multipliers Fill Factors 95% for Cable Feeder and Distribution Fill Factors 95% for Electronics 95% Penetration Rate Adjustment



Summary of the Impact of ETI Corrections to the BCM on the Average Monthly Cost and the Aggregate Support Requirement for Washington State.

Per Line Switch Cost Reduced from Default Level of \$238.87 to \$167 (Fixed Cost per Switch of \$647,526 Eliminated)				
Default BCM ETI Correction Percentage Decrease				
Aggregate Support at \$20	\$77,846,835	\$61,393,675	21%	
Aggregate Support at \$30	\$50,692,630	\$41,171,091	19%	
Aggregate Support at \$40	\$37,662,599	\$30,674,620	19%	
Annual Benchmark Cost	\$380,427,268	\$328,869,847	14%	
State Average Monthly Cost	\$16.94	\$14.64	14%	

Feeder and Distribution Cable Fill Factors Increased from Default Levels to 95% Distribution Cable Multipliers Adjusted for Rural Areas				
Default BCM ETI Correction Percentage Decrease				
Aggregate Support at \$20	\$77,846,835	\$38,486,149	51%	
Aggregate Support at \$30	\$50,692,630	\$22,756,400	55%	
Aggregate Support at \$40	\$37,662,589	\$14,653,261	61%	
Annual Benchmark Cost	\$380,427,268	\$322,808,207	15%	
State Average Monthly Cost	\$16.94	\$14.37	15%	

Note: Results for all tables reflect use of the Hatfield/MCI Cost Factor.



Summary of the Impact of ETI Corrections (Cont'd.)

Per Line Switch Cost Reduced from Default Level of \$238.87 to \$167

Fixed Cost per Switch of \$647,526 Eliminated

Feeder and Distribution Fill Factors Increased to 95%

Distribution Cable Multipliers Adjusted for Rural Areas

Cost Results Adjusted to Reflect 96% Subscribership Rate

	Default BCM	ETI Correction	Percentage Decrease
Aggregate Support at \$20	\$77,846,835	\$29,230,056	62%
Aggregate Support at \$30	\$50,692,630	\$17,429,545	66%
Aggregate Support at \$40	\$37,662,589	\$11,430,572	70%
Annual Benchmark Cost	\$380,427,268	\$282,552,902	26%
State Average Monthly Cost	\$16.94	\$12.58	26%

Note: Results reflect use of the Hatfield/MCI Cost Factor.



Summary of the Impact of ETI Sensitivity Analyses of the BCM on the Average Monthly Cost and the Aggregate Support Requirement for Washington State.

Per Line Costs for SLC and AFC Electronics Reduced from Default Levels of \$500 and \$550 Respectively to \$250 and \$500 Respectively.

Discount Levels Reduced from Default Levels of 20% and 10% Respectively to 40% and 25% Respectively.

			
	Default BCM	ETI Correction	Percentage Decrease
Aggregate Support at \$20	\$77,846,835	\$36,759,502	53%
Aggregate Support at \$30	\$50,692,630	\$27,483,209	46%
Aggregate Support at \$40	\$37,662,589	\$21,762,983	42%
Annual Benchmark Cost	\$380,427,268	\$268,096,113	30%
State Average Monthly Cost	\$16.94	\$11.94	30%

Copper/Fiber Crossover Point Increased from Default Level of 12,000 feet to 27,000 Feet				
Default BCM ETI Correction Percentage Decrease				
Aggregate Support at \$20	\$77,846,835	\$74,035,606	4.9%	
Aggregate Support at \$30	\$50,692,630	\$50,409,276	0.6%	
Aggregate Support at \$40	\$37,662,589	\$37,676,291	0%	
Annual Benchmark Cost	\$380,427,268	\$336,930,132	11.4%	
State Average Monthly Cost	\$16.94	\$15.00	11.5%	

Note: Results reflect use of the Hatfield/MCI Cost Factor.



BCM Input Data

OTHWESTERN BELL - MO OTHWESTER	290139701002 290139701003 290139701004 290179503001 290179503001 290179503001 292079701001 292079701004 290210028008 290759801002 290759801004 292278801001 291070904008 291499801002 291499801003 291499801003	1 4 2 3 1 3 2 2 2 1 2 2 4	199.96 337.04 181.94 109.12 70.29 30.42 107.6 125.03 256.56	10.95 38.09 19.96 22.96 1.94 19.12 19.71 30.42 17.6 35.03	974.55 3718.56 40085.88 36818.63 20570.1 6999.17 10801.32 16419.04 9618.46 3777.14	451 489 155 447 202 337 653 499 211 531	123.90 2.20 1.97 106.18 41.48 47.07 11.11 21.36 135.26 7.04	density-tothi/area 3.64 222.59 78.64 4.21 4.87 7.16 58.79 23.36 1.56	52.63 52.63 52.63 60.00 60.00 60.00 55.00	SIC SIC SIL SIL SIL SIL SIS	1 1 1 1	2.47 2.47 2.47 4.60 2.16 2.82 3.46 4.89
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ITHWESTERN BELL - MO SOURI TEL CO SOURI TEL CO SOURI TEL CO SOURI TEL CO ITEL OF MO INC DBA GTE MO	290179503001 290179503003 292079701001 292079701004 290210028008 290759801002 290759801003 290759801004 292279801001 291070904008 291499801001 291499801002 291499801002	2 3 1 3 2 2 2 1 2 2 4	128.09 199.96 337.04 181.94 109.12 70.29 30.42 107.6 125.03 256.56	38.09 19.96 22.96 1.94 19.12 19.71 30.42 17.6 35.03	40085.88 36818.63 20570.1 6999.17 10801.32 16419.04 9618.46 3777.14	447 202 337 653 499 211 531	106.18 41.48 47.07 11.11 21.36 135.26	4.21 4.87 7.16 58.79 23.36 1.56	60.00 60.00 60.00 60.00 55.00	SL SL FSI SL		2.47 4.60 2.16 2.82 3.46 4.89
THWESTERN BELL - MO ITHWESTERN BELL - MO ITHWESTERN BELL - MO ITHWESTERN BELL - MO ITHWESTERN BELL - MO SOURI TEL CO SOURI TEL CO SOURI TEL CO SOURI TEL CO ITEL OF MO INC DBA GTE MO	290179503003 292079701001 292079701004 290210028008 290759601002 290759601003 290759601003 292279801001 291070904008 291499801001 291499801002 291499801003	3 1 3 2 2 1 1 2 2 4	199.96 337.04 181.94 109.12 70.29 30.42 107.6 125.03 256.56	19.96 22.96 1.94 19.12 19.71 30.42 17.6 35.03	36818.63 20570.1 6999.17 10801.32 16419.04 9618.46 3777.14	202 337 653 499 211 531	41.48 47.07 11.11 21.36 135.26	4.87 7.16 58.79 23.36 1.56	60.00 60.00 60.00 55.00 60.00	SIL SIL FSI SIL		2.16 2.82 3.46 4.89
ITHWESTERN BELL - MO ITHWESTERN BELL - MO ITHWESTERN BELL - MO SOURH TEL CO ITEL OF MO INC DBA GTE MO	292079701001 292079701004 290210028008 290759801002 290759801003 290759801004 292279801001 291070804008 291499801001 291499801002 291499801002	1 3 2 2 1 2 2 2 4	337.04 181.94 109.12 70.29 30.42 107.6 125.03 256.56	22.96 1.94 19.12 19.71 30.42 17.6 35.03	20570.1 6999.17 10801.32 16419.04 9618.46 3777.14	337 653 499 211 531	47.07 11.11 21.36 135.26	7.16 58.79 23.36 1.56	60.00 60.00 55.00 60.00	SIL FSI SIL	Ĺ	2.82 3.45 4.89
ITHWESTERN BELL - MO ITHWESTERN BELL - MO SOURI TEL CO SOURI TEL CO SOURI TEL CO SOURI TEL CO A TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	292079701004 290210028008 290759801002 290759801003 290759801004 292279801000 291070804008 291499801001 291499801002 291499801002	2 2 4 2	181.94 109.12 70.29 30.42 107.6 125.03 256.58	1.94 19.12 19.71 30.42 17.6 35.03	6999.17 10801.32 16419.04 9618.46 3777.14	653 499 211 531	11.11 21.36 135.26	58.79 23.36 1.56	60.00 55.00 60.00	FSI SIL		3.46 4.89
ITHWESTERN BELL - MO SOURI TEL CO SOURI TEL CO SOURI TEL CO SOURI TEL CO A TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	290210028008 290759601002 290759601003 290759601004 292279801004 291070904008 291499801001 291499801002 291499801003	2 2 4 2	109.12 70.29 30.42 107.6 125.03	19.12 19.71 30.42 17.6 35.03	10801.32 16419.04 9618.46 3777.14	499 211 531	21.36 135.26	23.36 1.56	55.00 60.00	SL	-	3.46 4.89
SOURITEL CO SOURITEL CO SOURITEL CO SOURITEL CO SOURITEL CO A TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	290759601002 290759601003 290759601004 292279801001 291070904008 291499801001 291499801002 291499801003	2 2 4 2	70.29 30.42 107.6 125.03 256.58	19.71 30.42 17.6 35.03	16419.04 9618.46 3777.14	211 531	135.26	1.56	60.00			4.89
SOURITEL CO SOURITEL CO SOURITEL CO SOURITEL CO A TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	290759601003 290759601004 292279801001 291070904008 291499801001 291499801002 291499801003	2 2 4 2	30.42 107.6 125.03 256.58	30.42 17.6 35.03	9618.46 3777.14	531				SIC	7	3.00
SOURITEL CO SOURITEL CO SOURITEL CO IA TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	290759601004 292279601001 291070904006 291499601001 291499601002 291499601003	2 2 4 2	107.6 125.03 256.58	17.6 35.03	3777.14		7 04		22.55			, 3.03
SOURI TEL CO IA TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	292279801001 291070904008 291499801001 291499801002 291499801003	2 4 2	125.03 256.58	35.03		_	7.04	75.41	60.00	SIC	ī	3.03
A TEL CO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	291070904008 291499801001 291499801002 291499801003	4	256.58			350	4.78	73.26	60.00	SIL		2.75
ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	291499601001 291499601002 291499601003				3415.43	150	88.24	1.7	60.00	SIC	ā	3.03
ITEL OF MO INC DBA GTE MO ITEL OF MO INC DBA GTE MO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	291499 6 01002 291499 6 01003			13.42	14389.04	334	47.31	7.06	55.00	SL		4.89
ITEL OF MO INC DBA GTE MO ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	291499001003	4	57.95	32.05	6701.78	346	5.06	68.35	46.15	St	-	5.64
ITEL OF MO INC DBA GTE MO IW-KAN TEL COOP INC - MO IW-KAN TEL COOP INC - MO	+		289.43	19.43	6733.06	451	62.04	7.27	46.15	SL		5.64
W-KAN TEL COOP INC - MO W-KAN TEL COOP INC - MO	291499603001	1	34.26	34.26	41965.37	255	182.14	1.4	46.15	SIL		5.64
W-KAN TEL COOP INC - MO		3	222.95	42.95	41113.19	134	48.38	2.77	46.15	SL	-	5.64
	290139702004	1	13.48	13.48	34194.07	368	66.67	5.52	43.11	SL		3.9
NORTH INC - MO	290139702003	1	359.65	0.35	21116.89	327	73.15	4.47	52.63	SIC	ЭĹ.	2.4
	290030101004	4	302.55	32.55	18879.86	182	6.65	27.38	55.00	SL		4.8
NORTH INC - MO	290030103002	3	141.04	38.96		•	44.04	7.63	60.00	SK	ji.	2.9
ITEL OF MO INC DBA GTE MO	290939704002	2	71.6	18.4	33083.68	421	110.50	3.81	58.13	SL		4.3
ITEL OF MO INC DBA GTE MO	290939704003		267.38				38.37	6.88		SL		4.8
ITEL OF MO INC DBA GTE MO	290939704004	1	336.44				42.72	2.13	58.13	SI		4.3
THWESTERN BELL - MO	290997001061	2	63.76				3.54	80.47		FL	-SICL	4.8
THWESTERN BELL - MO	290997001064	2	47.31				5.36	62.82		and the second second second	SICL	4.8
JTHWESTERN BELL - MO	290997002025	2					5.44	77.87			·SICL	41
THWESTERN BELL - MO	290997005003	3	173.67				16.29	57.53		The second second second second	-SICL	4.8 4.8 5.1
THWESTERN BELL - MO	290997005004	1	242.13				3.52	64.45		The second secon	-SICL	1 41
THWESTERN BELL - MO	290997005006	1 7	234.92				4.63	49.44			SICL	51
JTHWESTERN BELL - MO	290997006022	1	304.46				14.00	50.85			SICL	4.6
TED TEL CO OF MISSOURI - MO	291859801003	7	344.21				116.13	2.17		SI		2.4
TED TEL CO OF MISSOURI - MO	291859801004		130.15				3.51	97.09		SI		2.4
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TECHNOLOGY, INC.

Attachment to Reply Comments of US West in CC Docket No. 96-45 surrebuttal, Copeland, May 1, Utah at 7:

The second item that causes an understatement of loop cost occurs when placement and structure costs are calculated using the BCM's weighted structure multiplier cost table with small cable sizes. This causes an understatement of investment because the decline in capitalized trench costs is not linear with the decline in per foot investment cost of copper cable as cable sizes decrease. Generally the per-foot costs to dig a trench or plow a cable are not a function of cable size, but rather a function of surface and soil conditions (e.g., plowable soil in rural area or asphalt cut and restore in urban area). This understatement has been pointed out by GTE in the California Universal Service proceeding, as well as ETI in the FCC's proceeding.

